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(FILE 'HOME' ENTERED AT 14:24:05 ON 21 OCT 2004)

FILE 'CA' ENTERED AT 14:24:58 ON 21 OCT 2004

L1 6 S FRANCHINI G?/AU AND 1989/PY  
L2 2 S L1 AND TEMPERATURE  
L3 90799 S (PHASE OR RESPONSE OR PROPERTY OR PARAMETER OR  
BOUNDARY) (3A) (PLOT? OR DIAGRAM OR GRAPHIC? OR GRAPH OR DISPLAY?)  
L4 35943 S L3 AND TEMPERATURE  
L5 14183 S L4 AND (COMPOSITION OR CONCENTRATION)  
L6 689 S L5 AND (OIL OR EMULSION OR MICEL?)  
L7 39408 S L3 AND (DETERMIN? OR MEASUR? OR CREAT? OR CHARACTERI?)  
L8 402 S L6 AND L7  
L9 16 S L6 AND (3D OR 3 D OR 3 DIMENSION? OR THREED OR THREE D OR THREE  
DIMENSION?)  
L10 125 S L8 AND (VISCO? OR CLOUD? OR TURBID?)  
L11 138 S L9-10  
L12 73 S L11 NOT PY>1998  
L13 75 S L2,L12

=> d bib,ab,kwic l13 1-75

L13 ANSWER 10 OF 75 CA COPYRIGHT 2004 ACS on STN  
AN 127:323037 CA  
TI Study of the **Viscosity** of Nonionic Surfactant/Deuterium Oxide Mixtures  
and of the Self-Diffusion Coefficient of the Surfactant Approaching the  
Liquid/Liquid Coexistence Curve  
AU Lesemann, M.; Martin, A.; Belkoura, L.; Fleischer, G.; Woermann, D.  
CS Institut fuer physikalische Chemie, Universitaet Koeln, Cologne, D-  
50939, Germany  
SO Langmuir (1997), 13(20), 5289-5293  
AB Plots of the **temp.** dependence of the shear **viscosity**  $\eta$  of C12E5/D2O  
mixts. with **comps.** in the range  $0.60 \times 10^{-2} < y < 10.08 \times 10^{-2}$  (crit.  
**compn.**  $y_c = 1.08 \times 10^{-2}$ ;  $y$ , mass fraction of C12E5) are S-formed (a  
shallow min. at a lower **temp.**  $T_{\eta,min}$  and a max. at a higher **temp.**  
 $T_{\eta,max}$ ). The **measurements** are carried out in the **temp.** range  $5^\circ\text{C} < T <$   
 $TP$ ;  $TP \approx 30^\circ\text{C}$  approaching the lower part of the binodal curve ( $TP$ , **temp.**  
of phase sepn. of the mixt.). In the **temp.** range ( $TP - T_{\eta,max}$ ) the  
**viscosity** decreases with increasing **temps.** At **comps.**  $y < 0.60 \times 10^{-2}$   
the **viscosity** decreases with increasing **temp.** monotonically. The self-  
diffusion coeff. of C12E5 in C12E5/D2O mixts. is **measured** in the same  
**temp.** and **compn.** range. The findings of both types of expts. are  
rationalized in terms of a model developed by Nilsson et al. (1983).  
The results give support to the hypothesis that the **characteristic**  
features of the **temp.** and **compn.** dependence of both transport coeffs.  
in the large aggregate region of the **phase diagram** have a common cause:  
The structural dynamics of the large **micellar** aggregates increases  
approaching the liq./liq. coexistence curve at **comps.**  $y > y_c$ . **Concn.**  
fluctuations with long range correlations appear to be involved in this  
process.

L13 ANSWER 14 OF 75 CA COPYRIGHT 2004 ACS on STN  
AN 125:302039 CA  
TI Rheology of a Lower Critical Solution **Temperature** Binary Polymer Blend  
in the Homogeneous, Phase-Separated, and Transitional Regimes  
AU Kapnistos, M.; Hinrichs, A.; Vlassopoulos, D.; Anastasiadis, S. H.;  
Stammer, A.; Wolf, B. A.  
CS Foundation for Research TechnologyHellas, Institute of Electronic  
Structure Laser, Heraklion, 71110, Greece  
SO Macromolecules (1996), 29(22), 7155-7163  
AB Small amplitude oscillatory shear rheol. is employed in order to  
investigate the linear **viscoelastic** behavior of the lower crit. soln.  
**temp.** blend polystyrene/poly(vinyl Me ether), PS/PVME, as a function of  
**temp.** and **compn.** At low **temps.**, where the mixt. is homogeneous, the  
dependence of the zero shear **viscosity** ( $\eta_0$ ) on **conc.** was **measured** and  
was well-described by means of a new mixing rule, based on surface  
fractions instead of vol. fractions. Shift factors from time-**temp.**  
superposition (TTS) exhibit a Williams-Landel-Ferry (WLF) behavior. As  
the macrophase sepn. **temp.** is approached (the **phase diagram** being  
established by **turbidity measurements**), the blend exhibits a  
thermorheol. complex behavior. A failure of TTS is obsd. at low  
frequencies, both in the homogeneous pretransitional and in the two-  
phase regimes. Its origin is attributed to the enhanced **conc.**  
fluctuations, which exhibit a crit. slowing down near the phase  
boundary in the homogeneous regime, and in the two-phase morphol.  
inside the phase-sepd. regime. The anomalous pretransitional behavior  
can be quantified using a recent mean field theory, yielding the  
spinodal **temp.** Furthermore, in the two-phase region an intermediate  
region of enhanced moduli at low frequencies is obsd., followed by flow  
at even lower frequencies, which is attributed to the two-phase  
structure. The linear **viscoelastic** properties of the phase-sepd.  
blends are, to a first approxn., adequately described by a simple  
incompressible **emulsion** model considering a suspension of droplets of  
one coexisting phase in the matrix of the other phase.

L13 ANSWER 15 OF 75 CA COPYRIGHT 2004 ACS on STN  
AN 125:178044 CA  
TI **Phase diagram** of water-sodium perfluorodecanoate-sodium decylsulfonate  
system  
AU Akune, Takeshi; Abe, Mitsuhiro; Murata, Yoshio; Maki, Toshiya; Moroi,  
Yoshikiyo; Furuya, Hiromi; Tanaka, Mitsuru  
CS Fac. Sci., Fukuoka Univ., Fukuoka, 814-01, Japan  
SO Journal of Colloid and Interface Science (1996), 181(1), 136-141  
AB **Phase diagrams** of Na perfluorodecanoate-water and Na decanesulfonate-  
water systems were drawn from changes of soly. and crit. **micelle concn.**  
(CMC) with **temp.** The mixed CMC values of the 2 surfactants of  
different **compns.** indicate that 2 kinds of **micelles** are formed; one is  
a fluorocarbon-dominant **micelle** and the other is a hydrocarbon-rich  
**micelle** with some fluorocarbon surfactants. The ppt. from aq. soln.  
contg. the 2 surfactants below the **micellization temp.** of the mixed  
surfactants (analyzed by x-ray diffraction) is a mixt. of the 2

surfactant crystals. An anal. was made of the **temp.** dependence of the elec. cond. of an aq. soln. contg. suspended ppts. which were formed at low **temp.** from soln. of a certain molar ratio of the 2 surfactants, and the **phase diagram** of the 3-component system was constructed. The **3-dimensional phase diagram** was quite different from that of mixed surfactants which are able to form mixed **micelles** of any **compn.**

L13 ANSWER 22 OF 75 CA COPYRIGHT 2004 ACS on STN

AN 123:66578 CA

TI Investigations of the Phase Changes of Nonionic Surfactants Using Microscopy, Differential Scanning Calorimetry, and Rheology. 1. Synperonic A7, a C13/C15 Alcohol with 7 mol of Ethylene Oxide

AU Dimitrova, G. T.; Tadros, Th. F.; Luckham, P. F.

CS Zeneca Agrochemicals (formerly part of the ICI group), Jealott's Hill Research Station, Bracknell/Berkshire, RG12 6EY, UK

SO Langmuir (1995), 11(4), 1101-11

AB The **phase diagram** of a nonionic surfactant (e.g., Synperonic A7 (C13/C15 alc. with 7 mol of C2H4 oxide)) was studied by using polarizing microscopy, DSC, and rheol. **measurements**. The various phases produced were studied from the texture obsd. at various surfactant **concns** by using polarizing microscopy. At 20°, the surfactant produced hexagonal (middle phase) structures when the **concn.** was increased > 30%. This middle phase structure changed to a lamellar (neat phase) structure at **concns**. .gtorsim. 55%. The neat phase remained up to a **concn.** of ~ 85%. Microscopic studies were also carried out as a function of **temp.** (at const. surfactant **concn.**). This established the **temp.** at which phase transition from liq. cryst. structure to isotropic liq. phases occurred. Some results on these phase changes were also obtained by using DSC **measurements**. Both steady state and oscillatory **measurements** were carried out as a function of surfactant **concn.** and **temp.** At surfactant **concns**. < 30% (i.e., in the L1 region), the **viscosity-temp.** curves showed a max. that shifted to lower **temps.** as the surfactant **concn.** increased. The initial increase in **viscosity** with increase of **temp.** is attributed to aggregation and/or change in the shape of the **micelle**, while the redn. is thought to be due to the breakdown of the **micellar** structure. **Viscoelastic measurements** of the concd. surfactant solns. (30-85%) (i.e., in the hexagonal and lamellar regions) were carried out at 20°. The moduli-**concn.** curves show 2 maxima at ~ 45 and ~ 70% and this is explained in terms of the structural changes that occur in the system as the **concn.** is increased. **Measurements** as a function of **temp.** showed a rapid redn. in the moduli values at a crit. **temp.** at which the liq. crystal structure undergoes "melting" to form a liq.-like structure. The rheol. results were used to establish the **phase diagram** and the results were compared with those obtained by using microscopy and DSC.

L13 ANSWER 24 OF 75 CA COPYRIGHT 2004 ACS on STN

AN 122:249067 CA

TI Effect of NaCl on a Nonionic Surfactant Microemulsion System

AU Ajith, S.; Rakshit, Animesh Kumar

CS Faculty of Science, M. S. University of Baroda, Baroda, 390 002, India

SO Langmuir (1995), 11(4), 1122-6  
AB Various types of microstructure and macroscopic phase changes of the pseudoternary system alkane/Brij 35 + propanol/H<sub>2</sub>O (studied in the presence of different amts. of NaCl at different **temps.**) are described. **Viscosity** and conductance studies reveal that the system at 80% surfactant (S) (where S indicates Brij 35 and 1-propanol together) probably exists as a bicontinuous microemulsion at all H<sub>2</sub>O fractions even in the presence of NaCl. In the presence of NaCl, the pseudoternary **phase diagrams** of these systems change with change of **temp.** Increasing the **concn.** of NaCl brings down the Winsor I → III transition **temp.** and at 2.5 M NaCl, the system exists as Winsor III along the entire range of **temp.** studied (30-70°). However a Winsor III → II transition was not obsd. in this case in this **temp.** range and also within the NaCl **concn.** range studied. The **cloud** point of the microemulsions and the contact angle of these systems with a Téflon surface were also **detd.** The contact angles indicate similar structure over the entire range of **oil/H<sub>2</sub>O** ratios.

L13 ANSWER 29 OF 75 CA COPYRIGHT 2004 ACS on STN

AN 121:206560 CA

TI **Characterization** of a Poly(ethylene oxide)-Poly(propylene oxide) Triblock Copolymer (EO27-PO39-EO27) in Aqueous Solution

AU Glatzer, Otto; Scherf, Guenther; Schillen, Karin; Brown, Wyn

CS Institute of Physical Chemistry, University of Graz, Graz, A-8010, Austria

SO Macromolecules (1994), 27(21), 6046-54

AB The poly(ethylene oxide)-poly(propylene oxide) triblock copolymer (EO27-PO39-EO27) was studied in aq. soln. in a wide range of **temps.** and **concns.** A **phase diagram** is presented which is based on small-angle x-ray scattering, ultrasonic speed **measurements**, differential scanning calorimetry, low-shear **viscometry**, and light transmission **measurements**. A broad transition from unimers to **micelles** with increasing **temps.** is found. The **micelles** have close to spherical symmetry with a core-shell structure and an outer layer that can be described as a star **micelle**. The **micelles** grow in size with **temp.**, and phase sepn. with **clouding** takes place at **temps.** >85°. A stiff gel is found at **concns.** >24% by wt.

L13 ANSWER 30 OF 75 CA COPYRIGHT 2004 ACS on STN

AN 121:66331 CA

TI Phase Behavior and Properties of a Microemulsion in the Presence of NaCl

AU John, Ajith Cherian; Rakshit, Animesh Kumar

CS Faculty of Science, M.S. University of Baroda, Baroda, 390 002, India

SO Langmuir (1994), 10(7), 2084-7

AB The effect of salinity, particularly high NaCl **concns.**, on the **phase diagram** of the pseudoternary system cyclohexane/sodium dodecyl sulfate + propanol/water was studied at various **temps.** Drastic changes were obsd. with increasing salinity and a three-phase zone appears at approx. 1 M **concn.** At still higher **concns.** only two-phase regions remain. The vol. **measurement** with increasing salinity reveals three

types of Winsor formations (Winsor I, II, and III). The optimal salinity **detd.** by **plotting** solubilization **parameters** of oil  $V_o/V_m$  and that of water  $V_w/V_m$  against NaCl **concn.** declines with **temp.** increment and attains a constancy above 70°. Physicochem. properties, viz. conductance, **viscosity**, and adiabatic compressibility, investigated for a one-phase microemulsion in the presence of NaCl prove the existence of W/O, O/W, and bicontinuous structures in the system. An unexpected and surprising decrease in the cond. of W/O samples with elevation in **temp.** was also noticed.

L13 ANSWER 35 OF 75 CA COPYRIGHT 2004 ACS on STN

AN 119:273888 CA

TI **Cloud** point phenomena in the phase behavior of alkyl polyglucosides in water

AU Balzer, Dieter

CS Huels AG, Marl, Germany

SO Langmuir (1993), 9(12), 3375-84

AB Detailed investigations show that, for very narrow ranges of structure, alkyl polyglucosides have lower consolute **temps.** Compared with ethoxylates, the effects of electrolytes are very unusual. Thus, all inorg. salts, with only small differences, result in a distinct redn. in the **cloud** point, whereas alkali-metal salts have a strong hydrotropic effect. The electrolyte sensitivity is very much higher than for the ethoxylates. The effects of the alkyl polyglucosides can be explained on the assumption that there is a neg. elec. charge on the surface of the **micelles** while the ethoxylates are more or less uncharged. This is demonstrated by the effect of ionic surfactants on the **cloud** point, and by direct **measurements** of the  $\zeta$  potential both in **emulsions** and in **micelles**.

L13 ANSWER 36 OF 75 CA COPYRIGHT 2004 ACS on STN

AN 118:198923 CA

TI Aggregation behavior of hexaethylene glycol decyl ether/dipalmitoylphosphatidylcholine mixture in aqueous dispersion

AU Inoue, Tohru; Motoyama, Ryosaku; Miyakawa, Kenji; Shimozaawa, Ryosuke

CS Fac. Sci., Fukuoka Univ., Fukuoka, 814-01, Japan

SO Journal of Colloid and Interface Science (1993), 156(2), 311-18

AB The mixt. of hexaethylene glycol decyl ether (C10E6) and DPPC assumes diverse aggregation states in aq. dispersion, depending on the **compn.** and **temp.** Accordingly, the vesicle-to-mixed-**micelle** transformation occurring in this system exhibits a remarkably different behavior below and above 35.5°. The **phase diagram** of the aq. C10E6/DPPC mixt. was constructed based on the **turbidity**, quasi-elastic light scattering, and DSC **measurements**. The **characteristic** feature of this system is the appearance of a phase sepn. region, analogous to the phenomenon obsd. in aq. solns. of polyoxyethylene-type nonionic surfactants at **temps.** above the **cloud** points. The **temp.**-induced reversible transformation between mixed **micelles** and vesicles is also an interesting feature of this system, which has rarely been obsd. in other aq. dispersions of surfactant/phospholipid mixts.

L13 ANSWER 42 OF 75 CA COPYRIGHT 2004 ACS on STN

AN 116:46763 CA

TI Theoretical and experimental **determinations** of the crossover from dilute to semidilute regimes of **micellar** solutions

AU Carale, Teresa R.; Blankschtein, Daniel

CS Cent. Mater. Sci. Eng., Massachusetts Inst. Technol., Cambridge, MA, 02139, USA

SO Journal of Physical Chemistry (1992), 96(1), 459-67

AB A theor. framework for predicting the crossover surfactant **concn.** ( $X^*$ ) marking the transition from dil. to semidilute to soln. regimes of **micellar** solns. is presented. In the dil. regime, the **micellar** soln. consists of identifiable, rodlike **micelles** which are singly dispersed in the solvent, whereas in the semidilute regime it consists of a transient network of entangled rodlike **micelles**. The theor. formulation incorporates the unique salient features of the **micellar** system, including the self-assembling nature, polydispersity, and flexibility of the rodlike **micelles** present in soln. This general theor. description is then used to examine the possible occurrence of a crossover from dil. to semidilute regimes in aq. solns. of the nonionic surfactant n-dodecyl hexaethylene oxide (C12E6). In the C12D6-H2O system, the  $X^*$  vs. **temp.** crossover **concn.** curve intersects the coexistence curve, delineating the boundary between the 1- and 2-phase regions of the **phase diagram**, in the vicinity of the lower consolute (crit.) point, thus bisecting the **phase diagram** into dil. and semidilute regimes. It is noteworthy that the  $X^*$  values predicted by using the full **micellar** size distribution agree well with those predicted under the assumption of monodisperse **micelles** having an aggregation no.  $n$ , corresponding to  $\langle n \rangle_w$ , the wt.-av. **micelle** aggregation no. An attempt is also made to est. exptl. the C12E6 crossover **concn.** ( $X^*$ ) based on a comparison of the predicted dil.-soln. **viscosities**, calcd. in the context of a generalized M. Doi-S. Edwards (1978) theory applied to flexible, polydisperse rodlike **micelles**, with **measured viscosities** as a function of C12E6 **concn.** and **temp.** The exptl. deduced  $X^*$  values compared favorably with the theor. predicted ones. As in the case of  $X^*$ , it is noteworthy that predicted **viscosities** (using the full **micellar** size distribution) are in close agreement with those predicted under the assumption of monodisperse **micelles** having an aggregation no.,  $n = \langle n \rangle_w$ . There is also an interesting **temp.** dependence of the **viscosity** vs. C12E6 **concn.** curves. At very low surfactant **concns.**, the **viscosity** follows the conventional behavior; i.e., it decreases with increasing **temp.** Beyond a certain surfactant **concn.**, the **temp.** dependence is reversed; i.e., the **viscosity** increases with increasing **temp.** An interpretation of this behavior in the context of **micellar** growth is suggested. A discussion of the implications of the new findings for modeling the phase behavior of aq. **micellar** solns. contg. nonionic surfactants of the alkyl polyethylene oxide (CiEj) type is also presented.

L13 ANSWER 44 OF 75 CA COPYRIGHT 2004 ACS on STN

AN 115:120698 CA

TI Nonionic surfactant phase behavior. The effect of CH3 capping of the

- terminal OH. Accurate **measurements** of **cloud** curves
- AU Conroy, J. P.; Hall, C.; Leng, C. A.; Rendall, K.; Tiddy, G. J. T.;  
Walsh, J.; Lindblom, G.
- CS Dep. Phys. Chem., Univ. Umea, Umea, Swed.
- SO Progress in Colloid & Polymer Science (1990), 82(Surfactants Macromol.:  
Self-Assem. Interfaces Bulk), 253-62
- AB **Phase diagrams** were **detd.** by optical microscopy for several  
polyoxyethylene surfactants where the terminal OH group is replaced by  
OMe (surfactants denoted CnEOmOMe). The derivs. studied were  
C12EO4OMe, C12EO6OMe, and C12EO8OMe. In addn., a **phase diagram** is  
given for the conventional nonionic C12EO2. Changing OH to OMe has a  
drastic effect on phase behavior at higher **temps.** (>50 °C), reducing  
mesophase upper **temp.** limits and the **cloud temp.** (Tc) by 20-30 °C.  
Phase transitions that occur below 20 °C and the mesophase sequence  
with increasing surfactant **concns.** are almost unaltered by Me  
substitution. Accurate **cloud-curve measurements** are reported for  
C8EO4, C12EO4, C12EO8, C16EO6, C16EO8, and C22 = EO6 (hexaethylene  
glycol-cis-13-docosenyl ether, erucyl EO6). From these curves,  
accurate values of the crit. surfactant **concn.** and **temp.** for the lower  
consolute boundary are derived. All the data support the hypothesis  
that two very different processes exist for nonionic surfactant  
**clouding**, one due to crit. dewetting of EO chains (similar to EO  
polymer **clouding**) and the second arising from a rod/disk **micelle** shape  
change. Finally, surfactant self-diffusion **measurements** are reported  
for the two reversed bicontinuous cubic (V2) phases of C12EO2. These  
are similar for both phases and to not allow any structural difference  
to be **detd.**
- L13 ANSWER 49 OF 75 CA COPYRIGHT 2004 ACS on STN
- AN 113:12580 CA
- TI **Phase diagrams** of nonionic polymer-water systems: experimental and  
theoretical studies of the effects of surfactants and other cosolutes
- AU Karlstroem, Gunnar; Carlsson, Anders; Lindman, Bjoern
- CS Chem. Cent., Univ. Lund, Lund, S-221 00, Swed.
- SO Journal of Physical Chemistry (1990), 94(12), 5005-15
- AB An exptl. investigation of the interactions between nonionic polymers,  
such as ethyl(hydroxyethyl)cellulose and poly(ethylene oxide), and  
small mols. (alcs., inorg. salts, and surfactants) in soln. is  
presented and discussed. The exptl. tool in the investigation is **cloud**  
point (CP) **measurements**. The studied polymers belong to a class of  
colloids which displays a decreased soly. with increasing **temp.** in aq.  
(and certain nonaq.) solns. At the CP **temp.**, the system is transformed  
from a single isotropic soln. to a two-phase system. If binding of the  
cosolutes occurs, this may lead to either an increase or a decrease in  
polymer soly. Alternatively, the cosolutes interact preferably with  
the solvent and thereby affect the soly. of the polymer. A  
particularly strong effect on the polymer soly. is obtained for ionic  
surfactants in the presence of relatively low **concn.** of electrolytes,  
where a min. in the CP curve is obsd. at low surfactant **concns.** A  
theor. model based on Flory-Huggins polymer theory is shown to be  
capable of describing the obsd. phase behavior. In this model the

**clouding** in the pure polymer-water system is due to an equil. between polar and nonpolar conformers of the polymer segments. The exptl. obsd. phase behavior can then be modeled if there is a strong attraction between the surfactant and the polymer in its polar conformation, a weaker but still strong attraction between the nonpolar segments and the surfactant, and finally a weak attraction between the surfactant and water. Comparison between theor. and exptl. data gives new insight into the interactions on a mol. level. It is indicated that, at **temps.** close to the CP, the surfactant binds to the polymer as single mols. or small **micelles**, whereas at lower **temps.** it binds as larger **micelles**.

L13 ANSWER 50 OF 75 CA COPYRIGHT 2004 ACS on STN

AN 112:186320 CA

TI Phase equilibria of nonionic surfactant-water systems as a function of **temperature** and pressure: effect of mixing of surfactants

AU Nishikido, Nagamune

CS Fac. Sci., Fukuoka Univ., Fukuoka, 814-01, Japan

SO Journal of Colloid and Interface Science (1990), 136(2), 401-7

AB The **temp.**-pressure **phase diagrams** of mixed nonionic surfactants (tetra- and hexaoxyethylene dodecyl ether, C12E4 + C12E6) and nonionic + anionic surfactants (C12E4 + SDS) vs. water systems at const. **concn.** were **detd.** through the change in transmittance of the soln. The **phase diagram** of these systems, the intermicellar attractive interactions causing the **clouding** phenomenon, and the Krafft phenomenon of nonionic surfactants in water are discussed. The Krafft **temp.** (TK) of mixed (C12E4 + C12E6) in water were obtained exptl. at high pressure (60-350 MPa) and the dependence of TK on the mixing (**micelle**) **compn.** showed that different components C12E4 and C12E6 are completely miscible in both the **micellar** state and the hydrated solid state. In the **phase diagram** of the mixed (C12E4 + SDS)-water system, a slightly **turbid** aq. phase was obsd. in place of the lamellar phase and the so-called surfactant phase which exist above the **cloud temp.** in pure C12E4-water systems. In addn., 2 different solid forms are obsd. at high pressures, and this implies that different components C12E4 and SDS are completely miscible in the **micellar** state, but immiscible in the hydrated solid state.

L13 ANSWER 53 OF 75 CA COPYRIGHT 2004 ACS on STN

AN 111:9275 CA

TI Solution properties of homogeneous polyglycerol dodecyl ether nonionic surfactants

AU Sagitani, Hiromichi; Hayashi, Yoshie; Ochiai, Michio

CS Yokohama Res. Lab., Pola Corp., Yokohama, Japan

SO JAOCs, J. Am. Oil Chem. Soc. (1989), 66(1), 146-52

AB The synthesis and soln. properties of di-, tri- and tetraglycerol monododecyl ethers (A) were described. The phase behavior, surface tension, **cloud** point, and HLB value of these surfactants in aq. solns. and in mixed solns. of water/oil were investigated and compared with values for polyoxyethylene dodecyl ether (I). The surface tension **measurements** showed that A had sufficiently low values of surface



tension and crit. **micellization concn.** (cmc) to serve as useful nonionic surfactants. The mesophases appearing in the A systems were more stable in a high **temp.** range than the mesophases of the I systems. The **cloud** point and HLB data indicated that addn. of one glycerol group was equiv. to the addn. of three oxyethylene units, as far as the hydrophilic property was concerned. The **phase diagrams** of the A/dodecane/water systems showed that the solubilizing and emulsifying powers of A were greater than those of I. The polyglycerol chain could be even more useful as the hydrophilic part of nonionic surfactants than the conventional oxyethylene chain.

L13 ANSWER 54 OF 75 CA COPYRIGHT 2004 ACS on STN

AN 110:219469 CA

TI Novel phase behavior in three-component **oil**-water-surfactant systems: a truncated isotropic channel in the **oil**-rich regime

AU Findenegg, G. H.; Hirtz, A.; Rasch, R.; Sowa, F.

CS Ruhr-Univ. Bochum, Bochum, D-4630/1, Fed. Rep. Ger.

SO Journal of Physical Chemistry (1989), 93(11), 4580-7

AB The phase behavior of 3-component systems of the type H<sub>2</sub>O + hydrocarbon + poly(oxyethylene) alkyl ether (C<sub>8</sub>E<sub>4</sub> and C<sub>10</sub>E<sub>5</sub>) was studied at **temps.** below the phase inversion. A narrow one-phase region was found in the **oil**-rich corner, which intrudes into the central miscibility gap between water and **oil**. At low **temps.**, the molar ratio of H<sub>2</sub>O and surfactant in this phase corresponds to 2 H<sub>2</sub>O mols. per oxyethylene group of the surfactant, and thus this phase may represent a hydrate strongly swollen with **oil**. As the **temp.** is raised, this region of one-phase stability becomes sepd. from the main one-phase region at higher surfactant **concns.** and shrinks to a point at which this phase decomps. into 2 other liq. phases at a **temp.** T<sub>max</sub>. Below this **temp.**, the one-phase region is connected with 2 narrow three-phase regions, one of which disappears at a lower crit. end point while the other extends to much lower **temps.** **Measurements** of the densities, **viscosities**, and interfacial tensions at three-phase coexistence are also presented and are consistent with the proposed **phase diagram**.

L13 ANSWER 55 OF 75 CA COPYRIGHT 2004 ACS on STN

AN 110:33138 CA

TI Conductometric titrations of polyprotic acids in nonaqueous mixed solvents. Effects of **temperature** and composition of the solvent mixture

AU **Franchini, Giancarlo**; Marchetti, Andrea; Preti, Carlo; Tassi, Lorenzo; Tosi, Giuseppe

CS Dep. Chem., Univ. Modena, Modena, 41100, Italy

SO Analytical Chemistry (1989), 61(2), 177-84

AB The effects of **temp.** and compn. of the solvent mixts. on the shape and anal. recoveries of conductometric titrns. of polyprotic acids were studied for the solvent system 2-methoxyethanol/ethane-1,2-diol operating at -10, 25, 50, and 75°. The N- or chair-shape of the titrn. curves depends on the physicochem. properties of the solvent, on the **temp.**, and on the acid solute to be titrated; in particular the influence of the distance between the carboxylic groups is discussed.

Titration. performed in 2-methoxyethanol are associated. in general with N-shaped curves, which however turn to chair-shaped as the **temp.** increases. Ethane-1,2-diol always produces chair-shaped curves as a consequence of its greater dissociation power than the titration. formed adducts. The study of the titration. of phthalic acid in some mixtures. of the above solvents exhibited behaviors consistent with previous observations regarding the existence of a particular "limiting mixture." which separates the solvent system under study into two well-defined groups ( $0 \leq \chi_{\text{ethane-1,2-diol}} < \text{"limiting mixture."}$  and  $\text{"limiting mixture."} < \chi_{\text{ethane-1,2-diol}} \leq 1$ ). The feasibility of the resolution. of acid mixtures. was demonstrated by titrating citric acid in the above solvents.

L13 ANSWER 61 OF 75 CA COPYRIGHT 2004 ACS on STN

AN 106:86713 CA

TI On an automated device for the **determination** of isotropic microemulsion phases of ternary systems including a nonionic surfactant

AU Tondre, C.; Robert, A.; Burger, C.

CS CNRS, Univ. NANCY I, Vandoeuvre-les-Nancy, 54506, Fr.

SO Journal of Dispersion Science and Technology (1986), 7(5), 581-97

AB The advantages and limits of an automatic procedure which permits the fast **detn.** of the **compn.** limits of isotropic microemulsion phases of water-oil-surfactant systems are **detd.** This system is based on detecting the **temp.** defining the lower and upper miscibility curves by the change of **turbidity** to study the solubilization of **oil** or water in binary mixtures. of nonionic surfactants and water or **oil** and then reconstructing the usual ternary **phase diagram** at any chosen **temp.** The method was esp. well suited for the investigation of systems including nonionic surfactants which are very sensitive to **temp.** changes. Four systems were tested including hydrogenated as well as fluorinated surfactants and **oils**. Data obtained for systems having neat **turbidity** changes were easy to interpret. For systems containing a liq. cryst. phase the **turbidity-temp.** curve was more difficult to interpret.

L13 ANSWER 68 OF 75 CA COPYRIGHT 2004 ACS on STN

AN 94:20853 CA

TI Effect of pressure on the solution behavior of nonionic surfactants in water

AU Nishikido, Nagamune; Yoshimura, Nobuyoshi; Tanaka, Mitsuru

CS Fac. Sci., Fukuoka Univ., Fukuoka, 814, Japan

SO Journal of Colloid and Interface Science (1980), 78(2), 338-46

AB The **phase diagrams**, i.e., the pressure-**temp.**-**compn.** diagrams of each system, tetra-, penta-, and hexaoxyethylene dodecyl ether (C12E4, C12E5, and C12E6, resp.) vs. water, were **detd.** by the use of the observation that the transmittance of the soln. changes sharply with the change of the dissolved state of the solute. The **temp.**-pressure **phase diagrams** involve the regions of the **micellar soln.**, the liq. surfactant phase + water phase, the hydrated solid + water phase, and the liq. crystal + water phase. The **cloud temp.** increased and its increasing rate became smaller with increasing pressure. By considering that the **cloud temp.**-**compn.** curve is a liq.-liq. mutual soly. curve and the idea of "associated soln." of Prigogine and Defay, the

thermodn. quantities (enthalpy, entropy, and vol.) accompanied by the sepn. of the liq. surfactant phase from the water phase above the **cloud temp.** for the C12E5-water system are derived. The enthalpy and entropy changes were pos. and depended little on pressure, while the vol. change was pos. and decreased, tending to zero, with the pressure up to 300 MPa. This suggests that hydrophobic bonding as well as the partial dehydration of oxyethylene groups of surfactant contribute to the sepn. of the liq. surfactant phase from the water phase. In the **compn.-** pressure diagram close to the regions of the **micellar** soln. and the hydrated solid + water phase for the C12E5-water system, a sudden increase in the soly. of surfactant at a certain pressure was found with decreasing pressure and at const. **temp.**, which corresponds to the Krafft phenomenon and can be attributed to the effective dissoln. of surfactant as a **micellar** form in water.

L13 ANSWER 73 OF 75 CA COPYRIGHT 2004 ACS on STN

AN 54:89685 CA

OREF 54:16991b-d

TI Solubilization of long-chain alkyl compounds by nonionic surfactants and **cloud** formation in such systems

AU Nakagawa, T.; Tori, K.

CS Shionogi & Co., Amagasaki

SO Kolloid-Zeitschrift (1960), 168, 132-9

AB **Cloud** points and **concn.** of solubilizate (I) at satn. (i.e. greatest **concn.** remaining transparent) were **detd.** for various **concns.** of n-C8H18, C10H22, C12H26, n-C8H17OH, C10H21OH, C12H25OH, n-C10H21Cl, C10H21NH2, and n-C9H19CO2H solubilized in 1% aq. n-C10H21(OCH2CH2)10OMe (prepn. given). The intersecting **cloud** point and satn. curves on a **temp.-concn. plot** define a **phase diagram**, which consists of domain A, below satn. and below the **cloud** point, a single phase; domain B, above satn. and below the **cloud** point, an aq. phase contg. dissolved surfactant (II) and I in equil. with a 2nd phase consisting of almost pure I; domain C, above satn. and above the **cloud** point, an aq. phase satd. with II and I in equil. with a 2nd phase consisting of I, II, and some water. Domain D is the special case of domain C, where I and II are immiscible and thus there are 3 phases. Evidence for these distributions was obtained by addn. of dyes sensitive to II **micelles**, e.g. water-sol. pinacyanol chloride and **oil-sol.** Sudan III.

=> log y

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